Consumer Adoption of Mobile banking in Jordan: Examining the Role of Usefulness, Ease of Use, Perceived Risk and Self-efficacy

Ali Abdallah Alalwan
Amman Collage of Banking and Finance
Al-Balqa Applied University
Amman
Jordan

Yogesh K. Dwivedi, Nripendra P. Rana and Michael D. Williams
Swansea University Bay Campus
School of Management
Fabian Way, Crymlyn Burrows
SWANSEA, SA1 8EN, Wales, UK

Abstract

Purpose - The main aim of this study is to propose and examine a conceptual model that best explains the key factors influencing Jordanian customers' intention to adopt Mobile banking (MB).

Design/methodology/approach - The proposed conceptual model was based on the Technology Acceptance Model (TAM). This was extended by adding perceived risk and self-efficacy as an external factors. Structural equation modelling (SEM) was conducted to analyse the data collected from the field survey questionnaires administered to a convenience sample of Jordanian banking customers.

Findings - The results showed that behavioural intention is significantly influenced by perceived usefulness, perceived ease of use, and perceived risk.

Implications - Practical and theoretical implications for both Jordanian banks and researchers in the MB context are also discussed in the concluding section.

Originality/value - Mobile banking related issues are yet to be examined empirically in the Jordanian context. This submission has attempted to fill this gap by empirically examining some of the important factors influencing the adoption of mobile banking from the Jordanian customers' perspective.

Keywords: Mobile banking, behavioural intention, adoption, Jordan, TAM

Article Classification: Research paper

1. Introduction

Increasingly, MB has been growing phenomenally over the banking sector and has become an integral banking channel alongside Internet banking, Telebanking, and ATM (Lee et al.,

2007). As an innovative banking channel, MB enables customers to carry out financial transactions (i.e. balance enquiries, fund transfers, payment of bills) using mobile devices, smartphones, or Personal Digital Assistants (PDAs) 24 hours a day, 7 days a week (Zhou et al., 2010). The prevalence in MB could be attributed to the ability of such technology to launch a variety of financial services over a wider geographical area, especially where there is a problem regarding Internet connections, or where setting up branches is difficult and not feasible (Cruz et al., 2010; Wessels and Drennan, 2010). Moreover, by introducing MB services, banks aim to provide customers with a better service by means of more friendly and cost-effective channels, thereby enhancing their satisfaction and loyalty (Alalwan et al., 2015; Gu et al., 2009; Lee et al., 2014; Lin, 2013; Wessels and Drennan, 2010).

In Jordan, mobile technology has evolved significantly over recent years; this is evidenced by the increasing penetration rate of the mobile service which had climbed to 140% by 2012 (The Jordan Times, 2013). Therefore, under intense competition, MB has received particular attention from the Jordanian banks as about 15 banks out of 26 had implemented MB services by the end of 2012 (Migdadi, 2012). Nevertheless, in both developed and developing countries, the evolution in MB services is not in line with the boom in mobile technology, and the growth in the adoption rate of this technology is still sluggish (Alalwan et al., 2015; Hanafizadeh et al., 2014; Lin, 2011; Püschel et al., 2010). For instance, Cellular-News (2011) reported that the highest rate of adoption of MB services were 25% and 22% in China and USA respectively. In the same way, these rates go down dramatically in developing countries (Cellular-News, 2011).

The adoption of MB in Jordan is not on the desired level because Jordanian banking customers are still sluggish in accepting these technologies (Awwad and Ghadi, 2010). For instance, statistics provided by some of the largest banks in Jordan (Arab Bank and HSBC) suggest that only 1.65% of Jordanian bank customers have adopted MB up to 2009 (Awwad and Ghadi, 2010). Hence, Jordanian banks have begun to express concern regarding the low adoption rate of MB, as well as questioning the feasibility of introducing such a channel, especially given the large amount of resources being invested in this regard (Migdadi, 2012).

In effect, persuading customers to switch their behaviour from using traditional banking channels to MB is not an easy process, especially as there is a lack of understanding of this phenomenon from the customers' perspective (Dwivedi and Irani, 2009). Thus, understanding the factors that might be responsible for the sluggish adoption of MB could

help the banks speed up the adoption rate of such technology. However, as it is in the early stage of deployment and implementation, MB-related issues are yet to be examined empirically in the Jordanian context. For that reason, this study is motivated to fill this gap by empirically examining the main factors influencing the adoption of MB from the Jordanian customers' perspective.

The remaining sections of the paper are structured as follows: the next section provides an overview of the relevant literature; a proposed conceptual model and associated hypotheses follow in Section 3. Section 4 outlines the research method. The results are then presented in Section 5 followed by a discussion in Section 6. Finally, Section 7 outlines the key conclusions and briefly discusses the main research limitations and future research directions.

2. Literature Review

The MB-related issues have recently been the focus of attention for many researchers (i.e. Hanafizadeh et al., 2014; Lee et al., 2014; Lin, 2011; Purwanegara et al., 2014; Zhou et al., 2010). However, examination of the usage patterns of MB (i.e. behavioural intention, usage behaviour, adoption, and continued intention to use) has received considerable interest over prior literature of MB (e.g. Lin, 2011; Mishra and Bisht, 2013; Purwanegara et al., 2014; Zhou et al., 2010; Zhou, 2011, 2012). Theoretically, in their endeavours to provide an in-depth understanding of customer intention and adoption of MB, researchers have formulated and integrated many theories and models from information systems (IS), information technologies (IT), and disciplines relating to human behaviour (Dwivedi and Irani, 2009). For instance, the Innovation Diffusion Theory (IDT) (Rogers, 2003) has been employed by along with perceived ease of use and trust (i.e. Lin, 2011; Hanafizadeh et al., 2014), and customer experience with cell-phone technology, self-efficacy, and facilitating conditions as proposed by Brown et al. (2003). The Technology Acceptance Model (TAM) (Davis et al., 1989) has also been proposed bedside system quality and social influences by Gu et al. (2009), Hanafizadeh et al. (2014), and Akturan and Tezcan (2012) to predict the customer intention and acceptance of MB. The Theory of Planned Behaviour (TPB) (Ajzen, 1991) was formulated by Luarn and Lin (2005) accompanied by perceived credibility in one single model. Püschel et al. (2010) modified their model based on factors extracted from the Decomposed Theory of Planned Behaviour (DTPB) and the IDT. The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) has been used by

Zhou et al. (2010) in the company of trust to predict the actual adoption of Mobile banking as well.

Nevertheless, there is a dearth of literature addressing behavioural intention and adoption of MB in Jordan (Awwad and Ghadi, 2010; Khraim et al., 2011). Based on simple regression analyses, both Khraim et al. (2011) and Awwad and Ghadi (2010) have found that innovation attributes - trialability, complexity, compatibility, relative advantages, and risk - are the key predictors of Jordanian customer intention and adoption of MB. Even though these studies enriched the current understanding regarding the main predictors of the adoption of MB in Jordan, there is still a necessity of selecting a theoretical framework appropriate to the customers' perspective as well as being able to capture the most important aspects that could formulate the Jordanian customers' intention to adopt MB. Therefore, this study is motivated to fill this gap by proposing a parsimony conceptual model being able to provide a better understanding regarding the adoption of MB from the perspective of Jordanian banking customers.

3. Conceptual Model and Research Hypotheses

The TAM was considered as an appropriate theoretical foundation for developing the conceptual model utilised in this study. Indeed, the TAM has been considered as one of the most popular and acceptable models within the IS field (Rana et al., 2013; Venkatesh et al., 2003). For instance, according to a Google scholar report, 7,714 citations have been recorded for the original study of Davis et al. (1989) by the end of June 2010 (Bradley, 2012). Further, as reported by Rana et al. (2013), Venkatesh and Davis (2000), and Irani et al. (2009), the TAM is a one of the strongest and a rational models to predict the individual's intention and acceptance over the last two decades. It is worthwhile to note that the TAM has been the most adopted theory to explain the customers' intention and usage of different kinds of electronic banking channels such as Internet banking (i.e. Al-Somali et al., 2009; Curran and Meuter, 2005) and Telebanking (Sundarraj and Wu, 2005; Curran and Meuter, 2007). By the same token, the TAM has successfully been used by different MBMobile banking studies to predict the customer intention and adoption towards this technology (i.e. Gu et al., 2009; Lee et al., 2007). Furthermore, this study aims to propose a parsimonious model which is able to capture the most important aspects that could shape the Jordanian customers' intention and adoption

of Mobile banking. Therefore, the TAM was found by the current study to be more suitable theoretical foundation to propose the conceptual model rather than the TAM2.

Building on the theory of reasoned action (Fishbein and Ajzen, 1975), TAM was proposed to examine the individual behaviour toward computer usage (Davis et al., 1989). In accordance with the TAM, two main constructs - perceived ease of use (PEOU) and perceived usefulness (PU) - are identified as main predictors of the behavioural intention (BI) towards using the specified technology (Davis et al., 1989). Therefore, both PEOU and PU were proposed in the current study model as key factors influencing the Jordanian customers' intention to adopt MB (see Figure 1). Nevertheless, perceived ease of use and perceived usefulness would not be able to provide a clear picture of explaining individual intention and behaviour-related technology (Gu et al., 2009; Luarn and Lin, 2005; Riquelme and Rios, 2010; Shareef et al., 2014; Zhou, 2011). Therefore, the TAM has been modified and extended by including other factors such as perceived risk (Hanafizadeh et al., 2014; Riquelme and Rios, 2010), trust (Kim et al., 2009; Zhou, 2011) and self-efficacy (Gu et al., 2009; Luarn and Lin, 2005).

Given that perceived risk (PR) has been recognised as one of the most important and frequently found factors influencing customers' intention and adoption of different electronic banking channels (Curran and Meuter, 2005; Eriksson et al., 2008; Gan et al., 2006; Jaruwachirathanakul and Fink, 2005; Kolodinsky et al., 2004; Taylor and Strutton, 2010), perceived risk was included as an extension to the TAM factors in the same conceptual model. Further justifications supporting and including PR has been provided in Section 3.3. Furthermore, in order to provide a better picture explaining the Jordanian customers' perception and intention towards MB, there was a necessity to include the role of personality factors among the conceptual model. Indeed, self-efficacy has been noticed over the related literature as one of the most repeated factors impacting the customers' perception towards such novel technologies (i.e. Luarn and Lin, 2005; Gu et al. 2009; Püschel et al., 2010; Zhou, 2012). Self-efficacy (SE) therefore was comprised among the conceptual model along with TAM factors and perceived risk. Further discussions regarding the research hypotheses are provided in the following subsections.
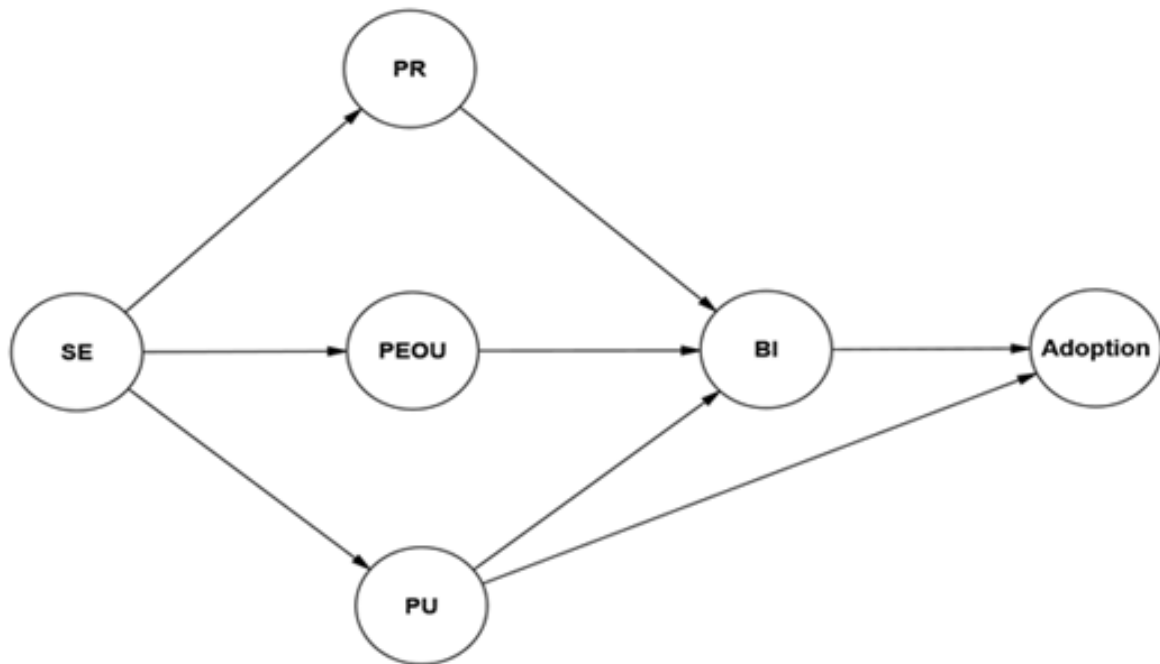
Figure 1: Proposed Conceptual Model of the Adoption of MB by Jordanian Customers (Adapted from Compeau and Higgins, 1995; Davis et al., 1989; Featherman and Pavlou, 2003)

3.1 Perceived Usefulness (PU)

PU is conceptualised as 'the degree to which a person believes that using a particular system would enhance his or her job performance' (Davis et al., 1989, p.320). Over the prior literature, PU has been noticed as one of the most influential drivers of BI to adopt MB (Akturan and Tezcan, 2012; Chen et al., 2014; Hanafizadeh et al., 2014; Kapoor et al., 2014; Luarn and Lin, 2005; Wessels and Drennan, 2010; Williams et al., 2015). Such as, PU was empirically supported by Wessels and Drennan (2010) as a key factor predicting BI to adopt MB by Australian customers. Gu et al. (2009) also empirically supported the role of PU in contributing to the customers' willingness to use MB. More recently, Hanafizadeh et al. (2014) supported the crucial role of PU in motivating Iranian customers to adopt MB.

According to the model of PC utilisation (MPCU), the actual use behaviour could be directly influenced by the role perceived consequences (i.e. perceived usefulness, job-fit) (Thompson et al., 1991). With reference to Triandis (1977), individual behaviour is usually determined by potential behavioural outcomes that are attractive and are more likely to be attended. Al-Qeisi and Abdallah (2013) supported this assumption by confirming a strong relationship between performance expectancy (similar factor to PU as proposed by Venkatesh et al. (2003)) and actual usage of Internet banking by Jordanian customers. Likewise, Zhou et al.

(2010) empirically approved a significant relationship between performance expectancy and actual adoption of MB.

Therefore, this study articulates the following hypothesises:

>*H1: Perceived usefulness will positively influence Jordanian customers' intention to adopt MB.*

>*H2: Perceived usefulness will positively influence Jordanian customers' adoption of MB.*

3.2 Perceived Ease of Use (PEOU)

Davis et al. (1989, p.320) defined PEOU as 'the degree to which a person believes that using a particular system would be free of effort'. Due to the particular nature of MB which requires a certain level of knowledge and skill, PEOU could play a crucial role in determining the customers' intention to use such technology. This thought has been empirically supported by different MB studies (Akturan and Tezcan, 2012; Gu et al., 2009; Hanafizadeh et al., 2014; Luarn and Lin, 2005; Püschel et al., 2010). In keeping with the argument of Davis et al. (1989), individuals could also be involved in the cognitive trade-off process between the efforts required to successfully apply the technology in front of the benefits and advantages attained by using such technology. Therefore, Davis et al. (1989) articulated that PEOU could contribute to the BI directly or indirectly by facilitating the impact of PU on BI. Such a causal relationship between PEOU and PU has been largely proven by many researchers (e.g. Gu et al., 2009; Luarn and Lin, 2005) who examined the customer adoption of MB. Thus, this study assumes the following hypotheses.

>*H3: Perceived ease of use will positively influence Jordanian customers' intention to adopt MB.*

>*H4: Perceived ease of use will positively influence perceived usefulness of using MB.*

3.3 Perceived Risk (PR)

According to Pavlou (2001, p.109), PR is conceptualised as 'the consumer's subjective expectation of suffering a loss in pursuit of a desired outcome.' In fact, customers could experience different kinds of risk such as performance, social, financial, psychological, and physical which makes the impacting the role of PR on BI more complicated (Featherman and

Pavlou, 2003). Moreover, customers are more apprehensive for the aspects pertaining to disconnection problems and their probability; this is coupled with their concerns associated with third parties, electronic piracy and cybercrimes which, in turn, lets customers be more hesitant in accepting online banking channels (Poon, 2008).

Indeed, there are several reasons for supporting and including perceived risk among the conceptual model proposed. Firstly, outcomes of using electronic banking channels have been extensively characterised with a high degree of uncertainty, intangibility, heterogeneity and vagueness (Curran and Meuter, 2005; Eriksson et al., 2008; Gan et al., 2006; Jaruwachirathanakul and Fink, 2005; Kolodinsky et al., 2004). Therefore, using such a channel to attain the financial transactions could comprise of further financial, performance and privacy risks (Martins et al., 2014). Secondly, an increase in the rate of electronic financial crimes in Jordan over the last decade in addition to the media focus on such crimes represents another reason for the increased concerns among the Jordanian banking customers to use the electronic banking channels (Addustour, 2012; Al Sukkar and Hasan, 2005; BBC Arabic, 2009; SarayNews, 2011). Therefore, it was clearly noticed that perceived risk could be one of the most important aspects that might play a vital role in forming the Jordanian customers' intention to use the SST banking channels.

A closer look at the relevant studies leads the authors to observe that PR is one of the most important obstacles hindering the customers' willingness to adopt MB (i.e. Akturan and Tezcan, 2012; Cruz et al., 2010; Hanafizadeh et al., 2014; Lee et al., 2007). Furthermore, in their Meta analyses of twenty-five articles in the area of online channels, Taylor and Strutton (2010) asserted a negative impact of PR on the behavioural intention with an average weight effect of -0.46. Accordingly, this study assumes the following hypothesis:

> **H5: Perceived risk will negatively influence the Jordanian customers' intention to adopt MB.**

3.4 Self-efficacy

Self-efficacy could be identified as perception and confidence of individuals in their ability to manage and conduct a set of particular actions needed to achieve specified kinds of performances (Bandura, 1986). Within the context of the information system, Compeau and Higgins (1995) stressed the important role of self-efficacy in contributing to both individuals' willingness to adopt new technology and their perception towards the expectation of

outcomes by using such systems. These expectations were categorised by Compeau and Higgins (1995) into two subgroups: performance expectation, which is related to behavioural outcomes of job performance; and personal outcome expectations such as individual esteem and sense of accomplishment. Accordingly, it could be argued that banking customers, who enjoy an adequate level of self-efficacy, are more likely to perceive using MB to be useful in their life as well as the simple technology to be used (Püschel et al., 2010; Wang et al., 2003). This is especially important when considering the nature of MB as one of the most recent and novel kind of self-service banking technologies requiring the customer to conduct financial transactions by himself and away from any support of banking staff (Püschel et al., 2010; Zhou et al., 2010). However, Venkatesh et al. (2003) indicated that the conceptual and operational dimensions of self-efficacy are different from effort expectancy (perceived ease of use). Venkatesh et al. (2003) also added that the impact of self-efficacy on the behavioural intention is restricted by the mediating effect of perceived ease of use. Therefore, the current study proposes self-efficacy as an indirect predictor of behavioural intention by being a mediating role of both perceived usefulness and perceived ease of use.

Such a role of self-efficacy in predicting both PU and PEOU has been commonly approved by different researchers over the relevant area of interest. For instance, in their study to examine the adoption of Internet banking, Wang et al. (2003) empirically verified a strong association between self-efficacy with both PEOU and PU. Similarly, Zhao et al. (2008) noticed a significant effect for the self-efficacy on PEOU. Cheng et al. (2008) also documented that self-efficacy had a significant influence on effort expectancy and performance expectancy. Furthermore, PEOU which was related to using Internet banking was noticed by Al-Somali et al. (2009) to be influenced by self-efficacy. A study examining the adoption of Mobile banking by Luarn and Lin (2005) empirically validated a strong relationship between self-efficacy and PEOU as well.

Further customers' perception and confidence in their ability to use Mobile banking could help them to mitigate their anxious risks perceived in using such a system (Bandura, 1986; Luo et al., 2010; Walker and Johnson, 2006; Zhou, 2012). This though has also been empirically supported by Walker and Johnson (2006) who noticed that observed perceived risk was negatively correlated with customer beliefs of capacity. Indeed, Walker and Johnson (2006) argued that customers are more likely to see that using self-service technologies will be less risky if they have a positive perception and confidence in their ability to use such a

system. Kim et al. (2005) also supported that perceived risk related to using e-commerce applications is significantly predicted by the role of self-efficacy.

Thus, this study proposes the subsequent hypotheses:

> *H6: Self-efficacy will positively influence perceived usefulness of using Mobile banking.*

> *H7: Self-efficacy will positively influence perceived ease of use related to using Mobile banking.*

> *H8: Self-efficacy will negatively influence perceived risk in using Mobile banking.*

4. Research Methodology

A self-administered questionnaire was employed to collect data using a convenience sample of 500 Jordanian banking customers from two main cities: Amman and Al-Balqa`. In total, twenty-eight scale items were adapted from prior information system literature (Compeau and Higgins, 1995; Davis et al., 1989; Featherman and Pavlou, 2003) to measure the main underlying constructs encompassed in the conceptual model (See Appendix 1). The main constructs of the TAM (PU and PEOU) were measured by items adapted from Davis et al. (1989) while items for PR were drawn from Featherman and Pavlou (2003). Featherman and Pavlou's (2003) scale covered the main dimensions of PR (i.e. performance risk, financial risk, privacy risk, and social risk). Five items of SE were selected from Compeau and Higgins' (1995) scale. All of these items were measured using the 7-point Likert scale ranging from 'strongly disagree (1)' to 'strongly agree (7)' (Dwivedi et al. 2006). As seen in Appendix 1, five of the most common banking transactions were also selected to measure the adoption behaviour of MB. The seven-point time scale was adopted to measure the adoption behaviour towards these services with anchors including: never, once a year, several times a year, once a month, several times a month, several times a week, several times a day (Venkatesh et al., 2012). The questionnaire also included six closed-ended questions to represent the respondents' demographic characteristics.

As Arabic is the native language of the respondents being targeted in the current study (Jordanian banking customers), the questionnaire, therefore, was converted into the Arabic language using the back translation method (Brislin, 1976). This was followed by conducting

a pilot study to assure the adequate level of reliability in the measurements used as well as to avoid any confusions or contradictions prior to conducting the main survey. Therefore, thirty questionnaires were allocated to a sample of Jordanian banking customers who were asked to fill the given questionnaire and provide any comments about it. Indeed, only twenty-two questionnaires were returned. Noticeably, the vast majority of those respondents indicated that the language used was clear and filling the questionnaire did not consume much time. Moreover, an inspection of Cronbach's alpha values was undertaken to see the scale items being able to have an acceptable level of reliability (Bhattacherjee, 2012; Sekaran, 2000). Table 1 presents all the values of Cronbach's coefficient alpha; they were found to be as low as (0.75) and as high as (0.92). Therefore, all were able to be above 0.70 as suggested by Nunnally (1978).

Table 1: Cronbach's Alpha Results of the Pilot Study

Latent Constructs	Cronbach's alpha (α) (> .70)
PU	0.92
PEOU	0.86
PR	0.90
SE	0.89
BI	0.91
Adoption	0.75

5. Results

5.1. Respondents' Profile and Characteristics

Out of 500 questionnaires distributed, 343 (68.8%) completed questionnaires were returned and considered valid for further statistical analyses. The main descriptive statistics suggested that the vast majority of respondents were male (65.6%) with their age ranging mainly from 25 to 40 (66%) and most of them have a Bachelor's degree or above (80%). About 91% of the respondents also have had more than 3 years' experience with the computer and Internet.

5.2 Outliers

An examination of the values of Mahalanobis-D squared distance (D^2) provided in the AMOS output file indicated that there are 17 outlier cases with a *p* value less that cut-off point <0.001 (see Table 2). Even though removing these outliers cases could enhance the multivariate analysis, the results generalisability could be negatively reflected by doing this (Hair et al., 2006; Tabachnick and Fidell, 2007). Moreover, due to the large sample size for the three data sets, a small number of outliers couldwould not be problematic (Kline, 1998; Tabachnick and Fidell, 2007). Accordingly, the decision was taken to retain these outliers for all three data sets.

Table 2: Multivariate Outlier (Mahalanobis Distance)

Observation number	Mahalanobis d-squared	p1	p2
1	97.550	.000	.000
172	82.640	.000	.000
269	74.332	.000	.000
40	72.470	.000	.000
257	69.416	.000	.000
218	65.762	.000	.000
279	65.277	.000	.000
54	65.127	.000	.000
259	65.065	.000	.000
240	65.020	.000	.000
30	63.670	.000	.000
298	62.648	.000	.000
308	62.260	.000	.000
23	59.572	.000	.000
258	58.654	.000	.000
178	57.012	.000	.000
16	56.353	.000	.000

5.3 Normality

A skewness-kurtosis approach was adopted to test univariate normality for each variable (Hair et al., 2010; Kline, 2005). Using AMOS_21, the statistical values of skewness and kurtosis were tested and found that they were within their respective levels. As reported in Table 3, all the given values given support the normality of univariate distribution, as due to all values of skewness were recognised to be below their cut-off point of 3 as well as all values of kurtosis were found to be not more than 8 (Kline, 2005).

Constructs	Variable	skew	kurtosis
PU	PU1	-1.118	1.149
	PU2	-0.751	0.231
	PU3	-1.159	1.177
	PU4	-0.763	0.394
PEOU	PEOU1	-1.252	1.752
	PEOU2	-1.151	1.107
	PEOU3	-1.069	1.103
	PEOU4	-0.947	0.643
SE	SE1	-0.864	0.549
	SE2	-0.648	0.031
	SE3	-0.589	-0.227
	SE4	-0.584	0.213
	SE4	-0.502	-0.173
Perceived Risk	PR1	0.639	0.310
	PR2	0.595	-0.018
	PR3	0.657	0.178
	PR4	0.507	-0.013
	PR5	0.181	-0.915
	PR6	0.547	-0.161
Behavioural Intention	BI1	-0.956	0.786
	BI2	-0.801	0.267
	BI3	-0.748	0.065
	BI4	-0.966	0.852
Adoption Behaviour	Service1	-0.301	-1.196
	Service2	0.796	-0.221
	Service3	0.802	-0.716
	Service4	0.155	-1.257
	Service5	1.670	1.843

5.4 Structural Equation Modelling (SEM) Analysis

To validate the proposed conceptual model and to examine the research hypotheses, the two-stage SEM approach using AMOS21 was employed; it began with evaluating the measurement model and then estimating the structural model (Byrne, 2010).

5.4.1 Measurement Model Analyses

In the measurement model stage, the model fitness was tested initially followed by evaluating the constructs' reliability and validity. The initial fit indices were found as follow: CMIN/DF = 2.098: ≤3.000; GFI = 0.87: ≥0.900;; AGFI = 0.79: ≥0.80; NFI = 0.88: ≥0.900;; CFI = 0.93: ≥0.900; RMSEA = ·0.057: ≤0.07. By comparing these fit indices with their recommended values, it was found that some of them - GFI, AGFI and NFI - were not able to attain the acceptable level (Anderson and Gerbing, 1988; Hair et al., 2010). This, in turn, demonstrated that the measurement model had poor fit to the observed data (Byrne 2010; Hair et al., 2010). Accordingly, there was a need to conduct a purification process on the measurement model by removing the problematic items ((Byrne 2010; Hair et al., 2010).

Based on the standardised regression weight table, three items (one item from SE, one item from PR and one item from adoption) were found to have values less than their cut-off value of 0.50 (Hair et al., 2010). Therefore, all of these items were removed from the revised version of the measurement model. Further, one item from behavioural intention and another one from PEOU were found to have residual values (4.5689 and 4.2459 respectively), and accordingly, the decision was to delete these two items as well (Hair et al., 1995). By doing so, the revised version of the measurement model was tested without including these problematic items. All the fit indices at this time were able to reach their threshold level as follow: CMIN/DF = 1.792: ≤3.000; GFI = 0.913: ≥0.900;; AGFI = 0.888: ≥ 0.80; NFI = 0.938: ≥ 0.900, CFI = 0.971: ≥ 0.900; RMSEA = ·0.048 ≤ 0.07.

All constructs were also tested to ensure an adequate level of scales reliability using composite reliability (CR) and average variance extracted (AVE). As seen in Table 2, the CR value for all latent constructs existed within their respective level of higher than 0.70 as suggested by Hair et al. (2010). By the same token, the AVE value of the latent constructs ranged from 0.54 (adoption) to 0.81 (BI); all of them were above their threshold value of .50 (Fornell and Larcker, 1981; Hair et al., 2010).

Table 2: Constructs Reliability

Latent Constructs	CR	AVE
PU	0.92	0.80
PEOU	0.87	0.70
PR	0.91	0.63
SE	0.87	0.66
BI	0.94	0.81
Adoption	0.83	0.54

Moreover, both convergent and discriminant validities were inspected to perform the constructs' validity. All scale items have a factor loading above the threshold value of 0.50 and were found statistically significant with a *p* value of less than 0.001. Relating to the discriminant validity, as seen in Table 3, the squared root of AVE for each construct was larger than the corresponding inter-constructs-correlation estimates. Finally, the statistical results on Harman's single-factor indicated that no single factor was able to emerge; the first factor was able to account for 43.401 per cent of variance which is less than the cut-off value of 50 per cent as suggested by Podsakoff et al. (2003). Thus, there were no concerns regarding the common method bias.

Table 3: Discriminant Validity

Latent Constructs	PU	PEOU	PR	SE	BI	Adoption
PU	**0.89**					
PEOU	0.64	**0.83**				
PR	-0.22	-0.23	**0.79**			
SE	0.56	0.57	-0.30	**0.81**		
BI	0.67	0.58	-0.30	0.33	**0.90**	
Adoption	0.46	0.36	-0.19	0.35	0.57	**0.73**

Note: Diagonal values are squared roots of AVE; off-diagonal values are the estimates of inter-correlation between the latent constructs

5.4.2 Structural Model Analyses

In the second of the SEM analyses, an inspection of the structural model was conducted with eight causal paths. The fit indices of the structural model were tested and found to be within

their acceptable level: such as, CMIN/DF=2.120; GFI=0.90; AGFI=0.87; NFI=0.92; CFI=0.96 and RMSEA=0.057. Thus, the structural model adequately fitted the observed data (Anderson and Gerbing, 1988; Byrne, 2010). Besides, the structural model was able to explain 58 per cent and 33 per cent of variance in BI and actual adoption respectively (see Figure 2).

Table 3: Results of Standardised Estimates of Structural Model

Hypothesised path	Standardised estimate	Z-value	P-value	Significant
PU→ BI	0.36	7.687	***	Sig
PU→ Adoption	0.15	2.125	0.040	Sig
PEOU→ BI	0.44	3.948	***	Sig
PEOU→ PU	0.53	7.740	***	Sig
PR→ BI	-0.12	-2.874	0.004	Sig
SE→ PU	0.26	5.605	***	Sig
SE→ PEOU	0.61	10.333	***	Sig
SE→ PR	-0.30	-5.242	***	Sig
BI→ Adoption	0.47	6.273	***	Sig
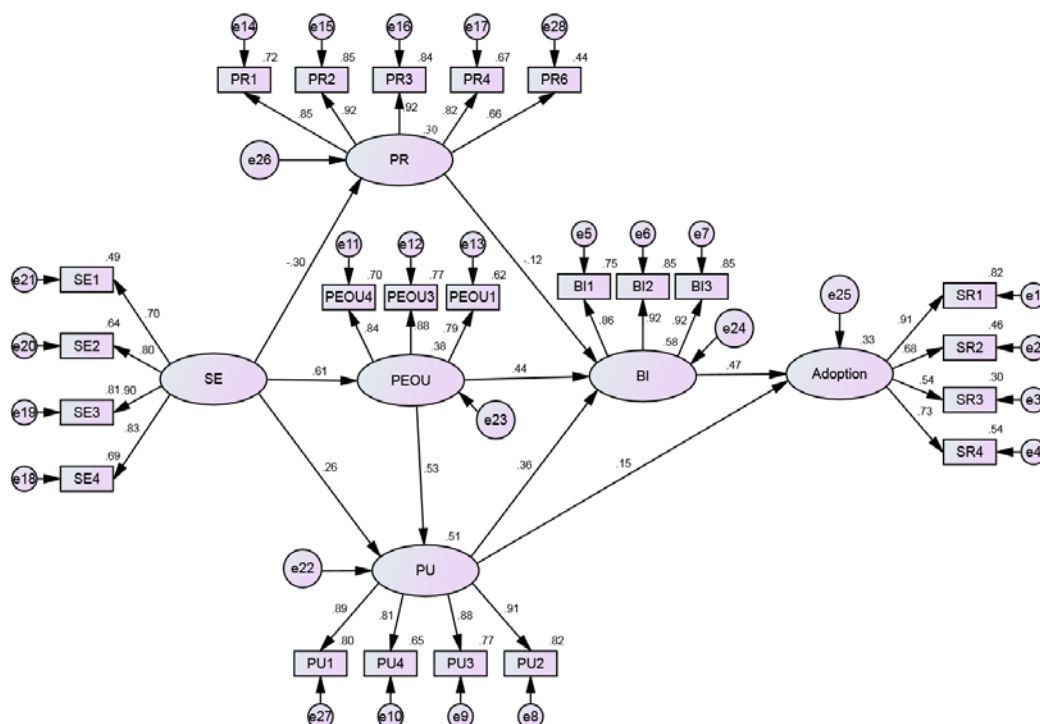
Figure 2: Validation of the Conceptual Model (Byrne, 2010; Hair et al., 2010)

Furthermore, an assessment of path coefficients showed that PU (γ=0.36, p<0.001); PEOU (γ=0.44, p<0.001); and PR (γ= -0.12, p<0.004) were all found to be significant predictors of

BI. PEOU (γ=0.53, p<0.001) was also recognised as a considerable determinant of PU (see Table 3). Consequently, all research hypotheses - H1, H2, H3 and H4 - are approved. SE was approved to be a significant predictor of PR (γ= -0.30, p<0.001), PEOU (γ= 0.61, p<0.001) and PU (γ= 0.26, p<0.001). Finally, adoption of MB was strongly predicted by both BI (γ= 0.47, p<0.001) and PU (γ= 0.15, p<0.040).

6. Discussion

This study was conducted with the intention of providing further understanding regarding the main factors that could shape the clients' intention and adoption of MB in Jordan. Therefore, to achieve this aim, a parsimonious model comprising factors taken from TAM (PU and PEOU) along with PR and SE was proposed. As shown in Figure 2, the statistical results supported the predictive power of the conceptual model in explaining adequate variance in BI. Specifically, all values of R^2 [BI (58%), PU (51%), PEOU (38%), PR (30%) and adoption (33%)] were observed within an acceptable level of 30% as suggested by Arambewela and Hall (2009); Holmes-Smith et al. (2006) and Kline (2011). In addition, such values of R^2 in the current study are fairly close to those accounted for by other IS and MB studies that have been formulated using TAM (Akturan and Tezcan, 2012; Kim et al., 2009; Venkatesh and Davis, 2000). This, in turn, provided further evidence supporting the conceptual model proposed in the current study to explain the Jordanian customers' intention and adoption of MB.

Taking into account the absence of a credible and updated list including the Jordanian banking customers or their contacts, as well as the banks preventing any information regarding their customers for privacy and security reasons, convenience sampling was found to be the more appropriate approach to be conducted to reach the banking customers in the present study (Castillo, 2009; Dillon et al., 1994). However, such a technique is more likely to be vulnerable to sampling bias. This is attributed to fact that units in non-probability samples are not randomly chosen, and accordingly, measuring the errors of sampling is not possible for those kinds of samples (Bhattacherjee, 2012). Conducting such sampling technique could also lead ~~leads~~ to systematically avoiding the inclusion of other banking customers who exist in different bank branches or somewhere else at the time of allocating the questionnaires (Bhattacherjee, 2012). So, ~~as~~ to address the issues related to convenience sample generalizability and to reduce the probability of sampling bias, a large sample size was used. In addition, the researcher was keen to have a better representation of the targeted

population considering the diversity in the banking customers' profiles and characteristics (e.g. education level, income level, gender, occupation, area of residence, social status) during the distribution of the questionnaires. (Miller et al., 2002). The self-administered questionnaires were personally allocated in an attempt to address the problem related to the lower response rate; there was a chance to remind and motivate respondents to fill in the questionnaires and return them as soon as possible (Bhattacherjee, 2012; Saunders et al., 2003). Theoretically, convenience sampling has been noticed as one of the most popular and frequently used sampling techniques applied to the studies of organisations and consumers (Bryman and Bell, 2007). Furthermore, several studies either in the technology acceptance field (i.e. Taylor and Todd, 1995a) or in the online banking context have successfully used the convenience sampling technique (i.e. Brown et al., 2003; Curran and Meuter, 2007; Dean, 2008; Khraim et al., 2011; Purwanegara et al., 2014; Zhou et al., 2010).

The statistical results highly proved PU as a key factor predicting both BI with a weight of 0.36 and actual adoption of MB with a regression weight of 0.15. In other words, Jordanian customers seem to be more motivated to adopt MB if they perceive it as more effective, productive, and a useful technology in their daily life. Likewise, the adoption of MB services is more likely to increase among those customers who perceive such system as a more useful and efficient channel to attain the banking transactions. This could be attributed to the ability of MB as a convenient way of allowing customers to access a wide range of the highest quality financial services without any time or place restrictions. Theoretically, these results are parallel with prior studies of MB that have tested and approved PU as a crucial factor in determining the customers' intention (i.e. Akturan and Tezcan, 2012; Gu et al., 2009; Hanafizadeh et al., 2014; Luarn and Lin, 2005) and actual adoption of MB (i.e. Al-Qeisi and Abdallah, 2013; Zhou et al., 2010).

The empirical results have also supported the significant relationship between PEOU and BI with a weight of 0.44. This, in turn, means that respondents were more likely to have a higher intention to adopt MB if they perceived that the use of such technology was not difficult and required less effort. Given the particular nature of MB, a certain level of knowledge and skill is required to properly use such system. Furthermore, using MB requires customers to perform all tasks alone without any assistance from banking staff which, in turn, PEOU could play a crucial role in determining the customers' intention to use MB. Such results of PEOU extracted in the current study are in line with existing literature in the IS area (e.g. Venkatesh

et al., 2003) and in MB as well (Gu et al., 2009; Hanafizadeh et al., 2014; Luarn and Lin, 2005). PEOU was also found to be a key predictor of PU with a weight of 0.53. In other words, if the customers perceive that using MB needs less effort and is not difficult, they will perceive to use such a system more advantageously and be more useful in their daily life (Davis et al., 1989). By the same token, several studies in the area of MB have supported the instrumental influence of PEOU as a contributing factor of BI via PU (i.e. Gu et al., 2009; Luarn and Lin, 2005).

SE was also found to be key predictors of PU, PEOU and PR. To put it differently, those customers who enjoy an adequate level of SE are more likely to have a positive perception that MB is more useful, easy and a less risky to attain the banking transactions. By increasing the daily interaction with technology and mobile innovation and having an adequate level of technological savvy, awareness, skills, and knowledge, individuals are more likely to be confident in their ability to get used to new technology as long as they are less likely to be influenced by the degree of difficulties that exist in technology (Castañeda et al., 2007; Davis et al., 1989; Venkatesh et al., 2003; Venkatesh et al., 2012; Wang et al., 2006; Wessels and Drennan, 2010). Over the prior literature, there are several studies that have supported the important role of SE in contributing both PEOU and PU (Al-Somali et al., 2009; Cheng et al., 2008; Luarn and Lin, 2005; Wang et al., 2003; Zhao et al., 2008).

Finally, this study empirically proved that PR was a significant negative factor determining the BI to adopt MB (γ=-0.12). Accordingly, it could be concluded that Jordanian customers are less likely to be encouraged to adopt MB with a higher degree of expectation of suffering a loss as a result of using such a system. This relationship could return to the particular and sensitive nature of the banking industry in general as well as online banking technology which is universally characterised by a high uncertainty, intangibility, heterogeneity and vagueness along with the absence of human interaction (Akturan and Tezcan, 2012; Lee et al., 2007). It is also worthwhile noting that within the Jordanian bank sector, Alalwan et al. (2014) and Khraim et al. (2011) strongly support the impacting role of PR on the Jordanian customers' intention and acceptance of MB and Internet banking. This could be attributed to the increase in the number of electronic financial crimes in Jordan over the last ten years as reported by the mass media in Jordan in particular, and the Middle East in general (i.e. Alghad, 2014; BBC Arabic, 2009; The Jordan Times, 2014).

6.1 Research Contribution

This study has significantly contributed to the knowledge and literature in Jordan by focusing more on MB as a more novel technology which, so far, has not been well evaluated in the Jordanian context. From a statistical point of view, the empirical results highly support the adequacy of the TAM factors, SE and PR to predict the customers' intention and adoption of MB. Hence, aspects relating to these factors must be the focus of attention of any bank in their endeavour to motivate their customers to use MB. Practically, expanding the range of financial services provided by the MB and maintaining the permanency of their performance efficiently and effectively, 24/7 will support the role of PU (Jaruwachirathanakul and Fink, 2005; Zhou et al., 2010). Moreover, a simple and friendly design of MB services will not only enhance the ease of use perceived in using such a channel but also will contribute to the role of PU (Jaruwachirathanakul and Fink, 2005). Further, an effective, personal and practical training programme that will educate customers on how they can efficiently use MB could be more helpful to override any complexity and confusion related to the use of this system (Laukkanen et al., 2008). Such a programme could also enhance the individuals' self-efficacy which, in turn, contributes to their perception towards such systems as more useful and easier than less banking channels (Compeau and Higgins, 1995).

More effort should be spent on alleviating customers' concerns and apprehensions from using MB as well. In this regard, banks should benefit from the advancement in the biometric technology area which introduces many solutions and tools to improve the customers' authentication mechanisms such as fingerprints and iris recognition (Laukkanen et al., 2008). Other strategies that could be more useful in mitigating PR include a money-back guarantee policy in the case of fraud; along with improving a structural assurance to prevent any hacking and piracy processes (Yousafzai et al., 2005).

7. Conclusion

The purpose of this study was to test the key factors influencing the BI to adopt MB in Jordan. Therefore, an integrated model was proposed based on the TAM factors, SE and PR. Particularly, three factors: PU, PEOU, and PR were all formulated as key factors predicting BI. Another causal path was also proposed between PEOU and PU in the same model. SE was proposed as key antecedent of three predictors of BI: PU, PEOU and PR. The SEM using AMOS21 was conducted to analyse data that was obtained from a convenience sample of 343

Jordanian banking customers. The proposed model was found to adequately fit the data as well as being able to account for 58% and 33% of variance in BI and adoption respectively. In addition, all the causal paths proposed were found to be statistically significant.

7.1 Limitations and Future Research Directions

The current study is restricted by some limitations and can be reported as follow. Firstly, this study just considers MB, which negatively reflects on the results' generalisability to other kinds of online banking channels. Therefore, future research should consider other channels such as Internet banking and Telebanking. Secondly, there are other factors that have been ignored and therefore should be measured by future researches such as intrinsic motivation, financial limitations, trust and habit. Thirdly, while this study has been conducted in Jordan which, in turn, mitigates the generalisability of the current results, future researches could worthily employ comparative studies by considering technological, cultural, and human differences between developed and developing countries. Fourthly, this study concentrated on the customers' intention adoption; yet, customer satisfaction, word-of-mouth, and customer loyalty as a consequence of using MB will be valuable directions to be examined in future researches.

References

Addustour. (2012). *E-crimes and law.* Available at: http://www.addustour.com/. Accessed: 14.12.12.

Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, *50*(2), 179-211.

Akturan, U. and Tezcan, N. (2012). Mobile banking adoption of the youth market: Perceptions and intentions. *Marketing Intelligence and Planning, 30*(4), 444-459.

Al Sukkar, A. and Hasan, H. (2005). Toward a model for the acceptance of Internet banking in developing countries. *Information Technology for Development*, *11*(4), 381-398.

Alalwan, A. A., Dwivedi, Y. K., Rana, N. P., Lal, B., and Williams, M. D. (2015). Consumer adoption of Internet banking in Jordan: Examining the role of hedonic motivation, habit, self-efficacy and trust. Journal of Financial Services Marketing, 20(2), 145-157.

Alalwan, A., Dwivedi, Y. K. and Williams, M. D. (2014). Examining factors affecting customer intention and adoption of Internet banking in Jordan. In *Proceedings of*

United Kingdom Academy of Information Systems UKAIS Conference, 7th-9th April 2014, Oxford, UK.

Alghad. (2014). *400 cybercrime within three months*. Available from: http://www. alghad. com/articles/513291-400. Accessed: 16.06.14.

Al-Qeisi, K. and Abdallah, G. (2013). Internet banking adoption in Jordan: A behavioral approach. *International Journal of Marketing Studies*, *5*(6), 84-107.

Al-Somali, S., Gholami, R., and Clegg, B. (2009). An investigation into the acceptance of online banking in Saudi Arabia. *Journal of Business Research*, *29*(2), 130-141.

Anderson, J. C. and Gerbing, D. W. (1988). Structural equation modelling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411-423.

Awwad, M. S. and Ghadi, M. Y. (2010). Investigating of factors influencing the intention to adopt mobile banking services in Jordan. *Dirasat: Administrative Sciences*, *37*(2), 545-556.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.

BBC Arabic. (2009). *Start using Iris recognition technology in ATMS by the Jordanian banks*. Available from: http://www.bbc.co.uk/arabic/middleeast/2009/10/091013_om_jordan_bank_tc2.shtml. Accessed: 16.06.14.

Bhattacherjee, A. (2012). *Social science research: Principles, methods, and practices*. (2nd Ed.). Florida, USA: AnolBhattacherjee.

Bradley, J. (2011). If we build it they will come?. The technology acceptance model. Information Systems Theory: Explaining and Predicting Our Digital Society, 1(28), 19-36.

Brislin, R. (1976). Comparative research methodology: Cross-cultural studies. *International Journal of Psychology*, *11*(3), 215-229.

Byrne, B. (2010). *Structural equation modeling with AMOS: Basic concepts, applications and programming*. (6th ed.). New York, USA: Taylor & Francis Group.

Castañeda, J. A., Muñoz-Leiva, F., and Luque, T. (2007). Web acceptance model (WAM): Moderating effects of user experience. *Information & Management*, *44*(4), 384-396.

Cellular-News. (2011). *Mobile banking surges as emerging markets embrace mobile finance.* Available from: http://www.cellular-news.com/story/49148.php. Accessed: 04.05.13.

Chen, H., Papazafeiropoulou, A., Chen, T. K., Duan, Y. and Liu, H. W. (2014). Exploring the commercial value of social networks: Enhancing consumers' brand experience through Facebook pages. *Journal of Enterprise Information Management*, *27*(5), 576-598.

Cheng, D., Liu, G., and Qian, C. (2008). On determinants of user acceptance of Internet banking: A theoretical framework and empirical study. In *Proceedings of Advanced Management of Information for Globalized Enterprises AMIGE,* 28th-29th September 2008, Beijing, China. IEEE.

Compeau, D. and Higgins, C. (1995) Application of social cognitive theory to training for computer skills. *Information Systems Research*, *6*(2), 118-143.

Cruz, P., Neto, L. B. F., Munoz-Gallego, P. and Laukkanen, T. (2010). Mobile banking rollout in emerging markets: Evidence from Brazil. *International Journal of Bank Marketing*, *28*(5), 342-371.

Curran, J. M. and Meuter, M. L. (2005). Self-service technology adoption: Comparing three technologies. *Journal of Services Marketing*, *19*(2), 103-113.

Curran, J. M. and Meuter, M. L. (2007). Encouraging existing customers to switch to self-service technologies: put a little fun in their lives. *Journal of Marketing Theory and Practice*, *15*(4), 283-298.

Davis, F. D. Bagozzi, R. P. and Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, *35*(8), 982-1003.

Dwivedi, Y. K. and Irani, Z. (2009). Understanding the adopters and non-adopters of broadband. *Communications of the ACM, 52*(1), 122-125.

Dwivedi, Y. K., Choudrie, J. and Brinkman, W. P. (2006). Development of a survey instrument to examine consumer adoption of broadband. *Industrial Management and Data Systems*, *106*(5), 700-718.

Eriksson, K., Kerem, K., and Nilsson, D. (2008). The adoption of commercial innovations in the former Central and Eastern European markets. The case of Internet banking in Estonia. *International Journal of Bank Marketing,* 26(3), 154-169.

Featherman, M. S. and Pavlou, P. A. (2003). Predicting e-services adoption: A perceived risk facets perspective. *International Journal of Human-Computer Studies*, *59*(4), 451-474.

Fornell, C. and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39-50.

Gan, C., Clemes, M., Limsombunchai, V., and Weng, A. (2006). A logit analysis of electronic banking in New Zealand. *International Journal of Bank Marketing*, *24*(6), 360-383.

Gu, J. C., Lee, S. C. and Suh, Y. H. (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications*, *36*(9), 11605-11616.

Hair Jr., J. F., Black, W. C., Babin, B. J. and Anderson, R. E. (2010). *Multivariate data analysis: A global perspective.* (7th ed.). Pearson Education International.

Hair Jr., J. F., Black, W., Babin, B., Anderson, R. E., and Tatham, R. (2006). *Multivariate data analysis*. (6th Ed.). New Jersey: Prentice Hall.

Hanafizadeh, P., Behboudi, M., Koshksaray, A. A. and Tabar, M. J. S. (2014). Mobile-banking adoption by Iranian bank clients. *Telematics and Informatics*, *31*(1), 62-78.

Irani, Z., Dwivedi, Y. K., and Williams, M. D. (2009). Understanding consumer adoption of broadband: An extension of the technology acceptance model. *Journal of the Operational Research Society*, *60*(10), 1322-1334.

Jaruwachirathanakul, B. and Fink, D. (2005). Internet banking adoption strategies for a developing country: The case of Thailand. *Internet Research*, *15*(3), 295-311.

Kapoor, K., Dwivedi, Y.K, Piercy, N.C., Lal, B. and Weerakkody, V. (2014). RFID integrated systems in libraries: extending TAM model for empirically examining the use. *Journal of Enterprise Information Management*, *27*(6), 731-758.

Khraim, H. S., Shoubaki, Y. E. and Khraim, A. S. (2011). Factors affecting Jordanian consumers' adoption of mobile banking services. *International Journal of Business and Social Science*, *2*(20), 96-105.

Kim, D. J., Ferrin, D. L. and Rao, H. R. (2005). Trust and satisfaction, two stepping stones for successful e-commerce relationships: A longitudinal exploration. *Information Systems Research*, *20*(2), 237-257.

Kim, G., Shin, B. and Lee, H. G. (2009). Understanding dynamics between initial trust and usage intentions of mobile banking. *Information Systems Journal*, *19*(3), 283-311.

Kline, R. B. (1998). *Principles and practice of structural equation modelling*. New York: The Guilford Press.

Kline, R. B. (2005). *Principles and practice of structural equation modelling*. New York: The Guilford Press.

Kolodinsky, J. M., Hogarth, J. M., and Hilgert, M. A. (2004). The adoption of electronic banking technologies by US consumers. *The International Journal of Bank Marketing*, *22*(4), 238-259.

Laukkanen, P., Sinkkonen, S. and Laukkanen, T. (2008). Consumer resistance to Internet banking: Postponers, opponents and rejectors. *The International Journal of Bank Marketing, 26*(6), 440-455.

Lee, H., Harindranath, G., Oh, S., and Kim, D. J. (2014). Provision of Mobile banking services from an actor–network perspective: Implications for convergence and standardization. *Technological Forecasting and Social Change*. Doi:10.1016/j.techfore.2014.02.007.

Lee, K. S., Lee, H. S. and Kim, S. Y. (2007). Factors influencing the adoption behavior of mobile banking: A South Korean perspective. *Journal of Internet Banking and Commerce*, *12*(2), 1-9.

Lin, H. F. (2011). An empirical investigation of Mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *International Journal of Information Management*, *31*(3), 252-260.

Luarn, P. and Lin, H. H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior, 21*(6), 873-891.

Luo, X., Li, H., Zhang, J., and Shim, J. P. (2010). Examining multi-dimensional trust and multifaceted risk in initial acceptance of emerging technologies: An empirical study of Mobile banking services. *Decision Support Systems*, *49*(2), 222-234.

Martins, G., Oliveira, T., and Popovic, A. (2014) Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management*, *34*(1), 1-13.

Migdadi, Y. K. A. (2012). The developing economies' banks branches operational strategy in the era of e-banking: The case of Jordan. *Journal of Emerging Technologies in Web Intelligence*, *4*(2), 189-197.

Mishra, V. and Bisht, S. (2013). Mobile banking in a developing economy: A customer-centric model for policy formulation. *Telecommunications Policy*, *37*(6), 503-514.

Nunnally, J. C. (1978). *Psychometric theory*. New York, NY: McGraw-Hill.

Pavlou, P. A. (2001). Integrating trust in electronic commerce with the technology acceptance model: Model development and validation. In J. DeGross (Ed.), *Proceedings of the Seventh Americas Conference in Information Systems*, (pp. 816-822). New York: ACM.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., and Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879.

Poon, W. C. (2008). Users' adoption of e-banking services: The Malaysian perspective. *Journal of Business & Industrial Marketing*, *23*(1), 59-69.

Purwanegara, M., Apriningsih, A., and Andika, F. (2014). Snapshot on Indonesia regulations in Mobile Internet banking users' attitudes. *Procedia-Social and Behavioral Sciences*, *115*, 147-155.

Püschel, J., Mazzon, J. A. and Hernandez, J. M. C. (2010). Mobile banking: Proposition of an integrated adoption intention framework. *International Journal of Bank Marketing*, *28*(5), 389-409.

Rana, N. P., Dwivedi, Y. K. and Williams, M. D. (2013). Evaluating alternative theoretical models for examining citizen centric adoption of e-government. *Transforming Government: People, Process and Policy*, *7*(1), 27-49.

Riquelme, H. E. and Rios, R. E. (2010). The moderating effect of gender in the adoption of Mobile banking. *International Journal of Bank Marketing*, *28*(5), 328-341.

Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York, NY: Free Press.

SarayNews (2011). *1103 electronic crimes have occurred in Jordan during 11 months.* Available from: http://www.saraynews.com/index. Accessed: 14.12.12.

Shareef, M.A., Kumar, V., Kumar, U., & Dwivedi, Y. (2014). Factors affecting citizen adoption of transactional electronic government. *Journal of Enterprise Information Management*, *27*(4), 385-401.

Sekaran, U. (2000) *Research methods for business, A skill-building approach.* (2nd Ed.). York: John Wiley & Sons.

Straub, D., Boudreau, M. C. and Gefen, D. (2004). Validation guidelines for IS positivist research. *The Communications of the Association for Information Systems*, *13*(1), 63.

Sundarraj, R. P. and Wu, J. (2005). Using information-systems constructs to study online- and telephone-banking technologies. *Electronic Commerce Research and Applications*, *4*(4), 427-443.

Tabachnick, B. G. and Fidell, L. S. (2007) *Using multivariate statistics.* (5th Ed.). Boston: Pearson Education.

Taylor, D. G. and Strutton, D. (2010). Has e-marketing come of age? Modeling historical influences on post-adoption era internet consumer behaviors. *Journal of Business Research*, *63*(9), 950-956.

The Jordan Times. (2013). Mobile phone penetration projected to reach 200%. Available from: http://jordantimes.com/mobile-phone-penetration-projected-to-reach-200. Accessed: 25.12.13.

The Jordan Times. (2014). Cybercrime a growing threat to internet users in Jordan. Available from:http://jordantimes.com/cyber-crime-a-growing-threat-to-internet-users-in-jordan. Accessed: 16.06.14.

Thompson, R., Higgins, C., and Howell, J. (1991). Personal computing: Toward a conceptual model of utilization. *MIS Quarterly*, *15*(1), 125-143.

Triandis, H. C. (1977). *Interpersonal Behavior.* Monterey, CA: Brooks/Cole Publishing Company (p.329).

Venkatesh, V. and Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186-204.

Venkatesh, V., Morris, M., Davis, G. and Davis, F. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly, 27*(3), 425-478.

Venkatesh, V., Thong, J. Y. L., and Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, *36*(1), 157-178.

Walker, R. and Johnson, L. (2006). Why consumers use and do not use technology-enabled services. *Journal of Services Marketing*, *20*(2), 125-135.

Williams, M. D., Rana, N. P. and Dwivedi, Y. K. (2015). The unified theory of acceptance and use of technology (UTAUT): a literature review. *Journal of Enterprise Information Management*, *28*(3), 443-488.

Wang, Y. S., Wang, Y. M., Lin, H. H., and Tang, T. I. (2003). Determinants of user acceptance of internet banking: An empirical study. *International Journal of Service Industry Management*, *14*(5), 501-519.

Wessels, L. and Drennan, J. (2010). An investigation of consumer acceptance of M-banking. *International Journal of Bank Marketing, 28*(7), 547-568.

Yousafzai, S. Y., Pallister, J. G. and Foxall, G. R. (2005). Strategies for building and communicating trust in electronic banking: A field experiment. *Psychology and Marketing*, *22*(2), 181-201.

Zhao, X., Mattila, M., and Tao. L. (2008). The role of post-training self-efficacy in customers' use of self-service technologies. *International Journal of Service Industry Management*, *19*(4), 492-505.

Zhou, T. (2011). An empirical examination of initial trust in Mobile banking. *Internet Research*, *21*(5), 527-540.

Zhou, T. (2012). Understanding users' initial trust in Mobile banking: An elaboration likelihood perspective. *Computers in Human Behavior*, *28*(4), 1518-1525.

Zhou, T., Lu, Y. and Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in Human Behavior*, *26*(4), 760-767.

Appendix

Table 4.1: Measurement Items Adopted

Constructs		Items	Sources
	PU1	I find Mobile banking useful in my daily life.	Davis et al. (1989)
	PU2	Using Mobile banking increases my chances of achieving tasks that are	Davis et al. (1989)
	PU3	Using Mobile banking helps me accomplish tasks more quickly.	Davis et al. (1989)
	PU4	Using Mobile banking increases my productivity.	Davis et al. (1989)
Perceived	PEOU 1	Learning how to use Mobile banking is easy for me.	Davis et al. (1989)
	PEOU 2	My interaction with Mobile banking is clear and understandable.	Davis et al. (1989)
	PEOU 3	I find Mobile banking easy to use.	Davis et al. (1989)
	PEOU 4	It is easy for me to become skilful at using Mobile banking.	Davis et al. (1989)
Behavioural Intention	BI1	I intend to use Mobile banking in the future.	Davis et al. (1989)
	BI2	I will always try to use Mobile banking in my daily life.	Davis et al. (1989)
	BI3	I plan to use Mobile banking in future.	Davis et al. (1989)
	BI4	I predict I would use Mobile banking in the future.	Davis et al. (1989)
Perceived Risk	PR1	Using Internet banking/Mobile banking/Telebanking services subjects my banking account to potential fraud.	Featherman and Pavlou (2003)
	PR2	Using Internet banking/Mobile banking/Telebanking services subjects my banking account to financial risk.	Featherman and Pavlou (2003)
	PR3	I think using Internet banking/Mobile banking/Telebanking puts my privacy at risk.	Featherman and Pavlou (2003)
	PR4	Hackers might take control of my bank account if I use Internet banking/ Mobile banking/Telebanking.	Featherman and Pavlou (2003)
	PR5	Using Internet banking/Mobile banking/Telebanking will not fit well with my self-image.	Featherman and Pavlou (2003)
	PR6	Internet banking/Mobile banking/Telebanking might not perform well and will create problems with my bank account.	Featherman and Pavlou (2003)

Self-efficacy	SE1	I could complete a transaction using Mobile banking if there was no one around to tell me what to do.	Compeau and Higgins (1995)
	SE2	I could complete a transaction using Mobile banking if I could call someone for help if I got stuck.	Compeau and Higgins (1995)
	SE3	I could complete a transaction using Mobile banking if I had a lot of time to complete the job I started.	Compeau and Higgins (1995)
	SE4	I could complete a transaction using Mobile banking if I had just the built-in help facility for assistance.	Compeau and Higgins (1995)
	SE5	I could complete a transaction using Mobile banking if I had never used a system like it before.	Compeau and Higgins (1995)
Adoption	Service 1	Balance enquiries and downloaded bank statements	Püschel et al. (2010), Zhou et al. (2010).
	Service 2	Funds transfer	Püschel et al. (2010), Zhou et al. (2010).
	Service 3	Requesting cheque book or bank certificates	Püschel et al. (2010), Zhou et al. (2010).
	Service 4	Paying bills	Püschel et al. (2010), Zhou et al. (2010).
	Service 5	Request increase in credit card(s) limit or pay any balance due	Püschel et al. (2010), Zhou et al. (2010).